FILE COPY FOREST INSECT LABORATORY, STANFORD UNIVERSITY CALIFORNIA.

476
x55.

MEMORANDUM

RELATION OF INSECT LOSS TO CUTTING POLICY ON THE PRESCOTT TIMBER SALE AREA.

SIERRA NATIONAL FOREST.

Forest Insect Station
Northfork, Calif.
March 6, 1924

Hubert L. Person
Junior Entomologist.

MEMORANDUM

Examination of D. brevicomis infestation on the Prescott, Forest Service Timber Sale Area.

Description of Area

This area consists of the timbered parts of 9 sections in the Jose Basin on the Sierra National Forest. T. 9S R 24E., sections 28,29, 30,31,32 and 33 and sections 4,5 and 6 in T. 10S. R. 24E. Most of 28 and 4, part of 5 and all of six, tho part of this general area, are not included in the sale.

The north central part of the area is moderately rolling, the remainder of the area has a moderate to steep topography. The elevation runs from 3200' to 4500'. The stand was pure yellow pine (small percent of incense cedar) of only fair quality averaging about 12 M.B.M. per acre. The area is broken by brush patches especially on the ridges. Most of the timbered area has been cutover. Logging was carefully done with teams, light donkey engines and trucks, leaving the area in excellent condition with very slight damage from logging. The slash was burned. About 87.5% of the original stand was taken out in logging, leaving 2,190 M. ft. B.M. or on the average of 1.8 M. per acre.

Purpose of Examination

During a preliminary cruise of the stand left on the area for seed trees and increment, Forest Examiner Sanford found that a large number of the trees were being killed by D. brevicomis. He suggested that an examination be made to determine how this beetle loss compared with the gain from increment.

Examination of the Area.

The area was cruised by Person and Wagner on February 12 and 13, 1924.

The south one half of Section 31 and the north one half of section 6 were cruised intensively by the 100% topographic method. Approximately one fourth of section 33 (uncut) was cruised in the same manner. The loss on the remainder of the area was estimated by long distance spotting from a favorable location on a ridge near the eastern side of the area, supplemented by observations made on trips thru the area.

D. brevicomis Loss

Estimate of beetle loss showing the year logged:

Section	Year Logged	D.b. loss per Section 1921 - 1922 - 1923		
29	1918 '19			10
30	1920			5
32	1920 '21			15
31 N ½	1921			15
31 S ½ (cruised)	1921	5	15	25
6 N ½ (cruised)	1922	10	30	40
5	1922 '23			30
4 SW ¼	1923			40
33(¼ cruised)	uncut	8	50	20
33 balance of sec.	"			10
28	Mostly uncut			20

The part of 33 that was cruised ran heavier than the surrounding timber probably because of a severe burn in that area in 1919. Some of the trees had died as a direct result of the burn and many had been weakened.

The D.b. loss in the standing timber evidently reached its peak in 1922 and is on the decline. This is also true in the adjacent projects especially the San Joaquin and the Stevenson Check area.

Since in many of the sections a large part of the area was either not included in the government sale as in 6,5 and 28 or was largely brush as in 30, the actual loss on the sale area had to be figured on the basis

of the amount of cutover area included.

The following table gives conservative figures for the D.b. loss on this area:

Section	Cutover Area in Acres	1923 D.b. loss on Cutover Area.
20	65	2
28	20	1
29	307.5	5
30	162.5	2
31	282.5	20
32	195.0	10
4	47.5 (?)	8
5	160. (?)	15
Total	1240.0	63

Beetle Loss vs. Increment

The average volume of the 56 beetle killed trees examined on this area was 640 B. ft. This gives a total loss of 40,320 B. ft. for the 1240 acres in the sale area or a loss of 32.5 B. ft. per acre.

The increment, which is very small even for a poor site, was placed by Sanford at .36%. This figure was based on a number of increment borings. This gives a total annual increment of 7,484 B. ft. for the area or about 6 B. ft. per acre. (On trees over 12" in diameter left for increment reading.)

In other words the increment is only 18.5% of the loss caused by D. brevicomis.

Future Loss.

It is evident that the beetle loss is heaviest on and near areas logged in 1923 (see first table) and that the infestation has declined on the first logged areas as evidenced by the small number of 1923 trees as compared with the number of earlier killed trees. This indicates that the beetles concentrate around the area being logged and that as the attraction

ceases after logging, the infestation should decline. However, increase in infestation in the general area might counteract this trend.

In any case trees should never be left for increment which are as slow growing as those found on this area, since such trees yield very little increment and are much more susceptible to D.b. attack than vigorous, fast growing trees.

Slash Disposal

All of the slash on this area has been burned except slash in section 6 which was privately owned. This slash was examined to determine whether or not it was serving as a breeding place for primary insects. The slash consisted of butts, cull logs, tops and limbs, most of which was cut in 1922, the remainder in 1923. Since it is known that no primary insect will breed in slash under 10" in diameter only slash of this size or larger was examined.

Each piece of slash used in the study was examined and an average sq. ft. of bark cut out and the number of attacks and exit holes of primary insects counted.

Summary of Slash Data

D. brevicomis was found to be the only primary insect breeding in the slash.

30 pieces of slash 10" or over in diameter were examined.

14 pieces or 47% were infested with D. brevicomis.

The average number of D.b. attacking per sq. ft. was 8.5.

The average number of D.b. emerging per sq. ft. was 12.0.

The normal number of attacking beetles in standing trees is 17.6 and the normal emergence 80, and so the attack was 48% of normal while the

emergence was only 15% of normal. Since there is a heavy mortality during flight it is certain that this slash could not have been responsible for an increase in the number of beetles and it is probable that it brought about an actual reduction.

It will be noticed that the D.b. loss in the S. ½ of section 31, where the slash was burned was lighter than that in the N. ½ of section 6 where the slash was not burned. This difference can easily be accounted for by the fact that the timbered area in 6 is almost 100% of the section while 31 is broken by large open brush areas. This difference is brought out further by the fact that the 1922 loss in 6, before the emergence from the slash would have affected the amount of infestation, is twice as great as in 31, while in 1923 after the emergence from slash, the infestation in 6 is only 36% greater.

INSECT SURVEY

PRESCOTT TIMBER SALE AREA — SIERRA NATIONAL FOREST

Feb. 12 & 13, 1924 - by Person & Wagner

R 24E